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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,359	04/12/2004	David G. King	2003-0782.02	3069
21972 7590 06/25/2008 LEXMARK INTERNATIONAL, INC. INTELLECTUAL PROPERTY LAW DEPARTMENT 740 WEST NEW CIRCLE ROAD BLDG. 082-1 LEXINGTON, KY 40550-0999				
EXAMINER				
MARTIN, LAURA E				
ART UNIT		PAPER NUMBER		
2853				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/822,359

Applicant(s)

KING ET AL.

Examiner

LAURA E. MARTIN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6, 10, 11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruch et al. (US 6517184 B1) in view of Barbour et al. (US 6476928 B1).

Bruch et al. disclose the following claim limitations:

As per claim 1: a housing having an array of nozzles (figure 4, elements 400 and 410); data stored in the printhead memory, said data being indicative of a location of at least one missing or malfunctioning nozzle of said array of nozzles (column 9, lines 47-64 and column 14, line 63-column 15, line 5) (the numbers correspond to specific nozzles).

As per claim 4: the printhead is adapted to be installed into a printer having firmware capable of reading said data from said printhead memory (column 14, line 63-column 15, line 5).

As per claim 5: the printer is adapted to use said data to format print jobs (column 14, line 63-column 15, line 5).

As per claim 6: providing a printhead having a housing including an array of nozzles (figure 4, elements 400 and 410) and storing data in a printhead memory, said data being indicative of a location of at least one missing or malfunctioning nozzle of said array of nozzles (column 9, lines 47-64 and column 14, line 63-column 15, line 5) (the numbers correspond to specific nozzles).

As per claim 10: the step of installing said printhead having firmware capable of reading said printhead memory (column 14, line 63-column 15, line 5).

As per claim 11: the firmware reads said printhead memory and a formatter formats a print job based on the data (column 14, line 63-column 15, line 5).

As per claim 13: the storing step includes performing a standard functional test (column 14, line 63-column 15, line 5).

As per claim 14: the storing step includes initiating an automated detection system (column 13, lines 3-28).

As per claim 15: a housing having an array of nozzles (figure 4, elements 400 and 410); a printhead memory storing data including a status of at least one nozzle of said array of nozzles (column 9, lines 47-64 and column 14, line 63-column 15, line 5), wherein said printhead is adapted to be installed into a printer having firmware capable of reading said data from said printhead memory and passing said data into a formatter formatting print jobs according to said data (column 14, line 63-column 15, line 5).

Bruch et al. do not disclose the following claim limitations:

As per claims 1, 6, and 15: a printhead memory disposed on or within said housing.

Barbour et al. disclose the following claim limitations:

As per claims 1, 6, and 15: a printhead memory disposed on or within said housing (figure 3, element 306).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the printhead and methods taught by Bruch et al. with the disclosure of Barbour et al. in order to print a high quality image in an efficient manner and to provide efficient and localized control of the printhead. It is well known to put memories in different locations within a printer.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bruch et al. (US 6517184 B1) and Barbour et al. (US 6476928 B1), and further in view of Kojima (US 6719391 B2).

Bruch et al. as modified disclose the following claim limitations:

As per claim 12: a method of making a printer.

Bruch et al. as modified do not disclose the following claim limitations:

As per claim 12: compensating for said at least one missing or malfunctioning nozzle by shingling.

Kojima discloses the following claim limitations:

As per claim 12: compensating for said at least one missing or malfunctioning nozzle by shingling (column 9, lines 10-37).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Bruch et al. as modified with the disclosure of Kojima in order to provide a higher quality printed image and to reduce banding.

Claims 1, 4-6, 10, 11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ujita et al. (US 5506611 A) in view of Bruch et al. (US 6517184 B1).

Ujita et al. disclose the following claim limitations:

As per claim 1: a housing having an array of nozzles (figure 11, element 12); a printhead memory disposed on or within said housing (figure 11, element 30); and data stored in said printhead memory (column 16, lines 8-25), said data being indicative of a missing or malfunctioning nozzle (discharge recovery conditions indicate that there is a clogged nozzle).

As per claim 5: the printhead is adapted to use data to format print jobs (column 16, lines 8-25).

As per claim 6: providing a printhead having a housing including a nozzle array (figure 11, element 12) and a memory (figure 11, element 30); and storing data in said printhead memory, said data being indicative of a missing or malfunctioning nozzle (discharge recovery conditions indicate that there is a clogged nozzle).

As per claim 15: a housing having an array of nozzles (figure 11, element 12); a printhead memory disposed on or within said housing (figure 11, element 30); and data

stored in said printhead memory, said data including information on the nozzles (discharge recovery conditions indicate that there is a clogged nozzle).

Ujita et al. do not disclose the following claim limitations:

As per claim 1: the data being indicative of a location of at least one missing or malfunctioning nozzle of said array of nozzles

As per claim 4: the printhead is adapted to be installed into a printer having firmware capable of reading said data from said printhead memory.

As per claim 6: storing data in a printhead memory, said data being indicative of a location of at least one missing or malfunctioning nozzle of said array of nozzles.

As per claim 10: the step of installing said printhead having firmware capable of reading said printhead memory.

As per claim 11: the firmware reads said printhead memory and a formatter formats a print job based on the data.

As per claim 13: the storing step includes performing a standard functional test.

As per claim 14: the storing step includes initiating an automated detection system.

As per claim 15: the printhead is adapted to be installed into a printer having firmware capable of reading said data from said printhead memory and passing said data into a formatter formatting print jobs according to said data.

Bruch et al. disclose the following claim limitations:

As per claim 1: the data being indicative of a location of at least one missing or malfunctioning nozzle of said array of nozzles (column 9, lines 47-64 and column 14, line 63-column 15, line 5) (the numbers correspond to specific nozzles).

As per claim 4: the printhead is adapted to be installed into a printer having firmware capable of reading said data from said printhead memory (column 14, line 63-column 15, line 5).

As per claim 5: the printer is adapted to use said data to format print jobs (column 14, line 63-column 15, line 5).

As per claim 6: storing data in a printhead memory, said data being indicative of a location of at least one missing or malfunctioning nozzle of said array of nozzles (column 9, lines 47-64 and column 14, line 63-column 15, line 5) (the numbers correspond to specific nozzles).

As per claim 10: the step of installing said printhead having firmware capable of reading said printhead memory (column 14, line 63-column 15, line 5).

As per claim 11: the firmware reads said printhead memory and a formatter formats a print job based on the data (column 14, line 63-column 15, line 5).

As per claim 13: the storing step includes performing a standard functional test (column 14, line 63-column 15, line 5).

As per claim 14: the storing step includes initiating an automated detection system (column 13, lines 3-28).

As per claim 15: the printhead is adapted to be installed into a printer having firmware capable of reading said data from said printhead memory and passing said

data into a formatter formatting print jobs according to said data (column 14, line 63-column 15, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cartridge taught by Ujita et al with the disclosure of Bruch et al. in order to improve the printhead servicing process.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ujita et al. (US 5506611 A) and Bruch et al. (US 6517184 B1), and further in view of Kojima (US 6719391 B2).

Ujita et al. as modified disclose the following claim limitations:

As per claim 12: a method of making a printer.

Ujita et al. as modified do not disclose the following claim limitations:

As per claim 12: compensating for said at least one missing or malfunctioning nozzle by shingling.

Kojima discloses the following claim limitations:

As per claim 12: compensating for said at least one missing or malfunctioning nozzle by shingling (column 9, lines 10-37).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Ujita et al. as modified with the disclosure of Kojima in order to provide a higher quality printed image and to reduce banding.

Applicant's arguments filed 4/16/08 have been fully considered but they are not persuasive. Applicant argues that there is no motivation to combine Bruch and Barbour; however, the examiner disagrees. Modifying the location of the memory within a printing apparatus such that the memory is on the printhead allows the printhead to have the ability to access and process certain data and to make their own analyzed and efficient decisions, such as firing and timing decisions.

The applicant argues that the Bruch reference teaches against storing malfunctioning or missing nozzle data in a printhead because, for proper operation, such data is required by other components that act on the printhead. For proper functioning of the printhead, the memory must be in communication with the printhead driver such that the printhead driver generates signals to control the printhead. Modifying the location of the memory within a printing apparatus such that the memory is on the printhead allows the printhead to have the ability to access and process certain data and to make their own analyzed and efficient decisions, such as firing by means of generating drive signals.

The examiner has also added a second rejection in which the printhead memory involves servicing information (recovery conditions). Modifying the disclosure of Ujita et al. with the teachings of Bruch et al. (specifically the nozzle locations) would benefit in the servicing operations such that it would allow the cartridge to use the recovery operation only when necessary by storing the nozzle locations that are inoperative.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **LAURA E. MARTIN** whose telephone number is (571)272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2853

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. E. M./
Examiner, Art Unit 2853

Laura E. Martin

/Manish S. Shah/
Primary Examiner, Art Unit 2853